

High Performance/Optimized Computing POC (HP/OC – POC)

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POC – HPC/Optimized Computing - Goals

- Build an application-ready PaaS for AI / Blockchain applications;
- Accommodate 2-3 medium scale apps;
- Take advantage of available services from public clouds (for complex apps);
- Find the Product(Service)-Market-Fit for non-crypto services;
- Fine-tune the pricing model for non-crypto services;
- Identify 1-2 customers;
- Learn and address the challenges of building cost effective non-crypto containers.

IaaS – HPC/Optimized Computing + Crypto Mining

Purpose Built Distributed Cloud

HPC/OC



HPC/OC



HPC/OC



Purpose Built DC



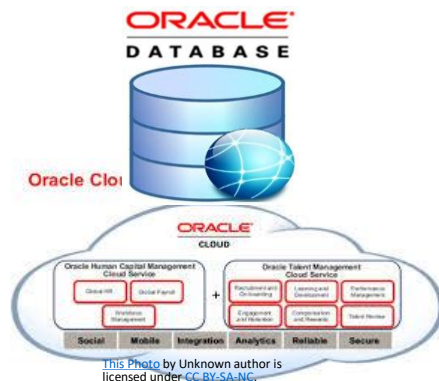
Purpose Built DC



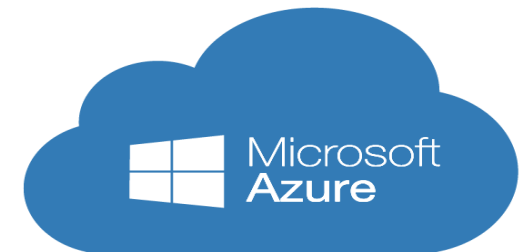
Purpose Built DC

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Public Clouds



Google Cloud



Hybrid Cloud - Why?

- Build of the work of others: augment CN with the services and scaling of public cloud;
- Why Outpost (AWS)? - Richest collection of services and the leader;
- Why Anthos (GCP)? - Kubernetes and TensorFlow stack (most used AI platform);
- Why OCI? – Cheapest, most diversified, unlimited cloud storage/databases

Strategy:

- CN is the best-in-class Applications Specific Cloud (ASC) or Purpose Built Cloud (PBC);
- Public clouds are CN's business partners for general purpose, highly scalable computing;
- CN and public clouds are complementary.

PaaS – HPC/Optimized Computing + Crypto Mining

Services

Crypto

Blockchain

AI ML/DL

Other

Purpose Built Distributed Cloud

HPC/OC



HPC/OC



HPC/OC



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Purpose Built DC



Purpose Built DC



Purpose Built DC

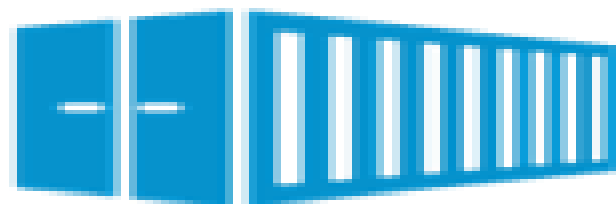
"Cloud Containers"

Cloud Container / AC



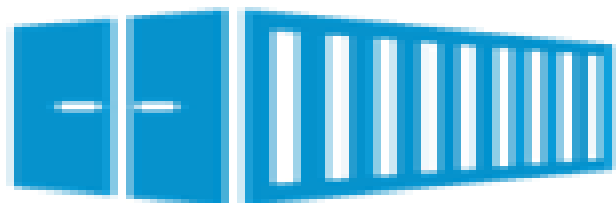
Nvidia GPUs

Cloud Container / AC



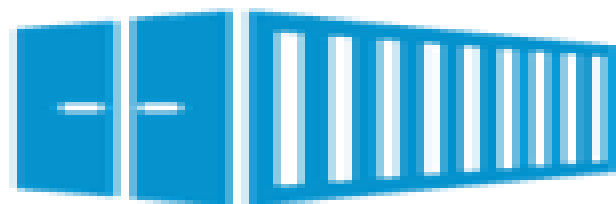
Data Storage

Cloud Container



Immersion

Dream - Cloud Container



Reflective Paint
Solar Modules
Heat Reuse
Geothermal Heat Pump

Main Tasks of the HPC/OC POC (R&D)

- Hybrid clouds with AWS, GCP, OCI (not a multicloud, yet)
- Tensorflow, AI software platform, for ML/DL apps
- Kubernetes ecosystem for SW container-based apps
- Lambda, serverless platform on AWS
- Connectivity with storage/databases from AWS, GCP, OCI
- Cloud container for non-crypto apps (no immersion)
- Identify GPU systems to be used (configuration, real estate, price)

POC – HPC/Optimized Computing

Services

Blockchain

AI ML/DL

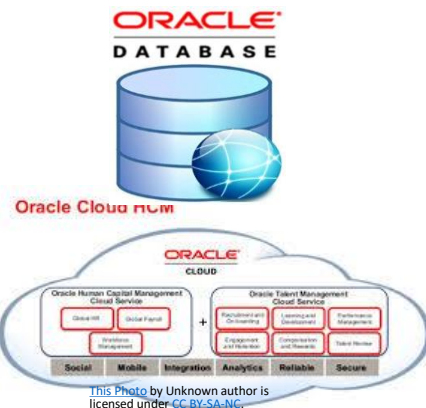
HPC/OC



Purpose Built DC

Nvidia GPUs

Purpose Built Data Center



Google Cloud

Public Clouds

HPC/OC POC – Capex Proposed Budget

Item	Approximate Budget	Start Date	End Date	Observations
AWS Outpost	\$180K-\$200K	Q2	Q3	+ Pay-per-sue AWS
Anthos Google	\$150k- \$180K	Q2	Q3	+ Pay-per-use GCP
OCI (Oracle)	\$10K+	Q2	Q3	+ Pay-per-use
Cloud container (non – immersion)	\$200K-\$400K	Q2	Q3?	Price based on functionality
Nvidia GPUs / one container	TBD	Q2	Q3	Ideally paid by customers
Cyber security reinforcement/container	\$20K	Q3	Q3	Hardware + Software /Optional
Misc.	\$50K	Q2	Q3	Hardware/Software
Total	\$600K - \$850			

"Buzzwords" - Help

- Hybrid cloud: cloud with services running agnostically on private and public clouds
- IaaS – Infrastructure as a Service
- PaaS – Platform as a Service
- GCP – Google cloud
- OCI – Oracle cloud
- ML – Machine learning: the study of computer algorithms that improve automatically through experience and by the use of data
- DL – Deep learning: a subset of ML focused on algorithms based on artificial neural networks
- Outpost – AWS hybrid cloud
- Anthos – Google hybrid/multi cloud
- TensorFlow – AI platform
- Kubernetes – runtime and platform for SW containers
- Cloud – programming paradigm for distributed logic and data
- Distributed Cloud – heterogeneous geographic distribution of proprietary clouds
- Container: lightweight, portable, SW execution unit.